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1 **Women in Autophagy, an initiative to promote gender parity in science**

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36 **Declaration of Interest**

37 All the authors declare no competing interests in relation with this work.

38

39 **Abstract**

40 While scientific questions are, for the most part, universal, the scientific workforce remains
41 skewed, with women and gender minorities still underrepresented. Initiatives like the Women in
42 Autophagy (WIA) network contribute to promoting the careers of these underrepresented groups
43 through a wide range of free, year-round scientific, mentoring and networking activities open to
44 all scientists.

45

46

47 **Editors' summary:**

48 In this Comment, McCabe and founding members present Women in Autophagy (WIA): an
49 initiative to promote the careers of women and gender minority groups through a wide range of
50 free, year-round scientific, mentoring and networking activities open to all scientists.

51

52 Historically, women and gender minorities have been underrepresented in scientific careers.
53 According to the 2024 Elsevier Report ¹, women are still not equally represented in research
54 compared to men, and nonbinary and gender nonconforming individuals remain largely
55 underrepresented in STEM ². By 2020 ³, women still received only half as many grants
56 compared to their male counterparts, produced two-thirds as many publications and filed just
57 3% of total patent applications. Excitingly, progress toward closing the gender gap in science is
58 being made, as various global and local initiatives focus on improving gender parity in the STEM
59 field.

60 One such initiative began in the summer of 2020, when a group of 25 female scientists from
61 around the globe met to discuss how they could carry on the legacy of the late Dr. Beth Levine -
62 a pioneer in the field of autophagy, a dedicated mentor, and a gifted scientific communicator ⁴.
63 Inspired by her commitment to scientific excellence, productive collaboration, and the training of
64 young scientists, these founding members established Women in Autophagy (WIA). The vision
65 was clear: to create a global forum for autophagy researchers that would facilitate scientific
66 exchange and offer mentorship and leadership opportunities for early career scientists. The
67 format was imposed: at the height of the pandemic, virtual communication became the only way
68 to “stay together” as a community, which unexpectedly proved instrumental in accelerating
69 inclusivity. The target was broad: to reach all those striving to level the playing field for early-
70 career researchers in autophagy. The response was unprecedented: through the collective
71 volunteer efforts of both young and senior scientists, who enthusiastically embraced the
72 initiative, WIA grew to 1,400 members from 53 countries in the 6 continents in just four years
73 (**Figure 1**).

74 Key to the success of WIA has been the flexible structure, which encourages continued input
75 from members, and the generosity and dedication of its volunteers. Just two months after the
76 idea for the network was proposed, the founders organized the first general organization
77 meeting, providing an opportunity for anyone interested to contribute to the network’s long-term
78 goals, priorities and organization. All WIA’s activities were built upon the three areas in which
79 Beth excelled: science, mentorship and scientific networking and communication (**Figure 2**).
80 This foundation allowed teams of volunteers to form six committees that continue to be the core
81 of the network: Scientific Advice, Journal Club, Fundraising, Mentoring, Communications and
82 the Annual Scientific Meeting committee, responsible for organizing the free online meeting held
83 each fall. WIA aimed to provide leadership opportunities to women and gender minorities, by
84 taking on roles as chairs and members of these committees and lead their initiatives. However,
85 from the very beginning, the guiding principle has been to make all activities open to everybody.

86 The initial challenge of increasing visibility to ensure the network reached all those who could
87 benefit from it was largely addressed with the support of geographically based autophagy
88 societies, such as the Club Francophone de l’AuTophagie (CFATG), the Nordic Autophagy
89 Society (NAS) and the Sociedad Española de Autophagy (SEFAGIA), who continue to support
90 WIA. Concerns about maintaining continuity in a network highly reliant on the efforts of
91 postdoctoral and graduate students - who will move on in their careers after a few years - were
92 addressed by establishing a chairing team (chair and co-chair) for each committee, with the co-
93 chair learning how to organize and manage year-round programming in preparation to take on
94 the lead. Each committee also counts on one or two faculty advisors who help resolve questions
95 and provide guidance in potential new initiatives. Though the network focuses on trainee
96 scientists, it is open to anyone interested in the field of autophagy, regardless of career stage
97 (current WIA membership distribution by career stage is shown in **Figure 3**).

Commentary

98 WIA membership and activities are entirely free, thanks to the generosity of individual donors,
99 foundations and corporate sponsors and the remarkable efforts of the fundraising committee,
100 which also helps members to gain valuable experience in pitching initiatives, approaching
101 patrons and managing budgets. The absence of fees, along with a virtual format, ensures global
102 accessibility for interested participants. Monthly journal clubs provide visibility to young
103 investigators by allowing them to present their recent publications, discuss the publishing
104 process, and answer audience questions. Regular technical workshops, organized by the
105 scientific committee, cover state-of-the-art methods and technical aspects of autophagy, such
106 as monitoring mitophagy or preparing samples for electron microscopy, while offering
107 participants the chance to seek specific advice from experts in these techniques. Central to
108 WIA's mission are the mentoring activities, organized by a committee consisting of faculty and
109 scientists at all career stages, which include mentoring hours and highly successful mentoring
110 workshops on topics spanning from work-life balance, and stress management to setting up a
111 lab or grant writing. WIA visibility, member engagement, and sense of community are driven by
112 an active communications team, which uses social media to promote member achievements,
113 announce events, and coordinate inter-committee activities. Since its inception, WIA has held an
114 Annual Symposium Webinar -a free multi-day virtual event featuring keynote speakers and
115 trainee oral and poster presentations. By hosting the symposium virtually, WIA provides
116 members access to the latest research in the field and opportunities to present and receive
117 feedback on their own work without the financial or travel restrictions of in-person conferences.

118 While delighted with the progress and impact WIA has made within the autophagic community
119 and beyond (**Box 1**), there is still important work ahead. Early on, we identified low membership
120 from Asia and strategized with members from countries in this continent on ways to better reach
121 and engage their communities, and these efforts are beginning to yield results. Increasing
122 membership from African countries remains a key goal. WIA has provided fellowships to support
123 participation in scientific meetings, in collaboration with the Rainwaters Foundation and the
124 Alzheimer's Association, but we also aspire to become a platform to mediate sponsored short
125 research internships, enabling members in underrepresented communities to train in autophagy
126 experts' laboratories. As an entirely virtual network, we have navigated the benefits and
127 challenges of social media, which enables members to regularly interact, share updates, find job
128 opportunities, and connect with other autophagy researchers. However, the value of in-person
129 meetings is not lost on us, and while discussions about a possible hybrid annual meeting are
130 ongoing, members have already begun hosting informal meetups at various in-person
131 conferences.

132 We believe that WIA may serve as an example of how to channel efforts to achieve global parity
133 in science across gender, socioeconomic status and underserved geographies.

134

135 **If you are interested in joining Women in Autophagy or learning more about this network,*
136 *please visit www.womeninautophagy.com.*

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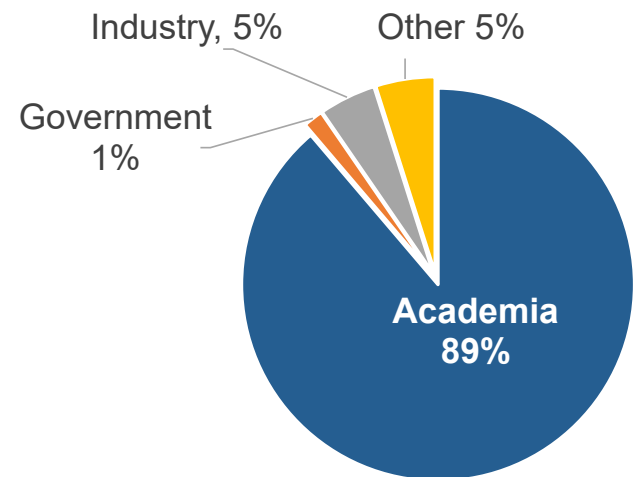
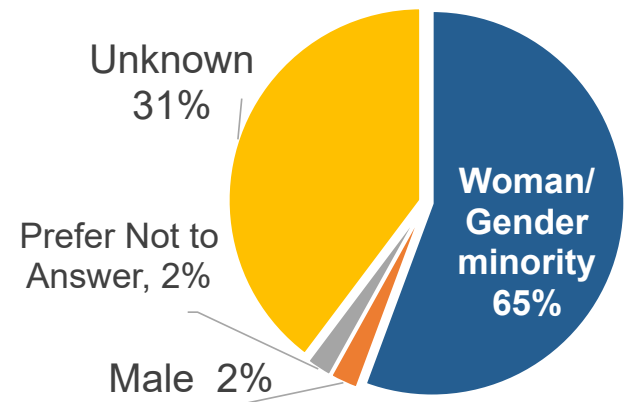
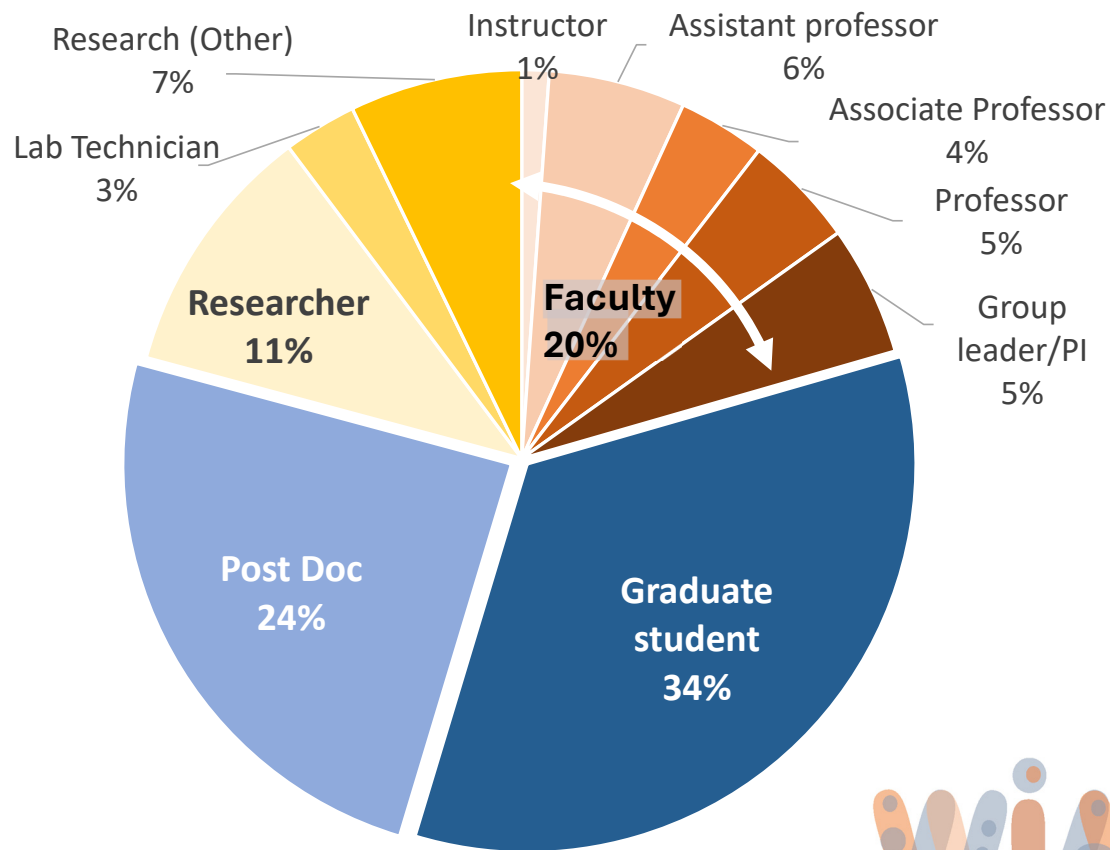
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150 **Box 1: Testimonials**

- 151 • *"WIA means a network of strong, driven, female scientists. Ever since being a member, my scientific*
152 *knowledge has greatly expanded in the field in autophagy, as well as, making many new connections*
153 *worldwide. The ability to be a volunteer for the Annual Symposium has given me immense experience*
154 *in organizing an annual symposium and has created connections and networks that would be impossible*
155 *to make otherwise. WIA is kind, helpful and impactful. Truly a one of a kind organization that has made*
156 *me embrace being a woman in autophagy." - **Rebecca Sereda**, WIA annual meeting committee chair*
- 157 • *"WIA stands out as the best example of a scientific initiative that successfully materialize what 'sense of*
158 *community' really is. The level of commitment exhibited by each individual in WIA leaves me truly*
159 *astounded. And the best of it, is that whatever we give, WIA gives back without counting." – **Caroline***
160 ***Mauvezin**, WIA mentoring committee co-chair*
- 161 • *"Beth's legacy lives on in our scientific discussions, friendships, and shared growth. This network isn't*
162 *just about autophagy; it's a dynamic space where we brainstorm, create, and, most importantly, form*
163 *meaningful connections." - **Muriel Mari**, WIA scientific advice committee member*
- 164 • *"It's a tremendous pleasure to meet and collaborate with such active, creative, and highly motivated*
165 *women, all striving towards creating a better world for all scientists and supporting each other - a quality*
166 *sometimes lacking in research institutions, unfortunately. It has been incredibly rewarding to be a part*
167 *of the WIA's growth day by day, and I hope to continue contributing for the remainder of my career and*
168 *beyond." - **Ghada Alsaleh**, WIA Scientific Advice Committee former chair*
- 169 • *"Volunteering for WIA makes me feel I belong to a supportive community of passionate women and I am*
170 *happy to play my part. Joining WIA allowed me to access unique mentoring sessions and great science,*
171 *to meet inspiring women that I would have probably not cross paths with if it was not for WIA and to*
172 *make new friends!" - **Elise Jacquin**, WIA communications committee co-chair*
- 173 • *"WIA is an awesome network of scientists from different disciplines, with a common interest: Autophagy.*
174 *Being totally volunteer-based work, the manifold activities of WIA and the ones to come reflects a true*
175 *collective work that provide tremendous opportunities for early career researchers, specially those from*
176 *under-represented spheres. From workshops, Journal Clubs, annual symposiums, to collaborative*
177 *opportunities all over the world, WIA's benefits endeavor to meet the needs of Autophagy Science and*
178 *community." - **Ghita Ghislat**, WIA fundraising committee chair*
- 179 • *"WIA is a wonderful network that provides good opportunities to minorities. It's amazing how much WIA*
180 *has accomplished as it is a volunteer based organization. It shows the quality of its members and*
181 *volunteers. So, It is a gift to be part of this community, which I am very proud of." – **Marina Garcia***
182 ***Macia**, WIA communications committee chair*
- 183 • *Thanks to the WIA network, I feel that now I am part of a huge family. I made new friends in the autophagy*
184 *community and I am very happy to meet members during conferences, but also recruit new ones. –*
185 ***Aurore Claude-Taupin**, WIA journal club committee chair*
- 186 • *Regardless of our locations, being part of WIA grants access to a treasure trove of experience and*
187 *insights on autophagy but also diverse topics, like stress management, establishing a laboratory or*
188 *career advice." – **Maria Soledad Alvarez**, WIA mentoring committee member*
- 189 • *"It's a fabulous space for scientific exchange. It has allowed me to stay updated and get to know*
190 *incredible female scientists working in the field of autophagy, both virtually and in person– **Mariana***
191 ***Tadic**, WIA communications committee member*
- 192 • *I had the chance to work closely with senior scientists, advise younger students and build relations which*
193 *have already proven to be important for my future career. Being part of WIA has certainly shaped me*
194 *into a better scientist and a better person." – **Aurora Scrivo**, WIA annual meeting committee member*
- 195 • *"WIA brings together female scientists as a union in which we have all learnt a lot of beautiful scientific*
196 *stories that people all over the globe have been contributing to the field of autophagy and we can build*
197 *up the connections although we are physically far away from each other. From my personal perspective,*
198 *I am so fortunate that I had the opportunity to grow together with WIA. - **Yuhong Ma**, WIA annual meeting*
199 *committee member*

Commentary

- 200 • *“Women in Autophagy is an organization that breaks frontiers to unite students and researchers*
201 *dedicated to autophagy. Through WIA, students can seek advice from top scientists, and beyond that,*
202 *they will receive support, kindness, and motivation.” - **Karla Alvarez Valadez**, WIA journal club*
203 *committee chair*
- 204 • *The WIA network really allowed me to connect to the Autophagy peers and stay updated in the area,*
205 *especially when I was working in another country, far from the huge centers. This network allows me to*
206 *talk and see developing careers for new investigators, other post docs and graduate fellows, with a huge*
207 *support of seniors mentoring us all. - **Thabata Lopes Alberto Duque**, WIA communications committee*
208 *member*
209
- 210



Executive Committee

Advisory Committee (Founding Members)

6 Volunteer –based Committees

ACTIVITIES

Mentoring Activities

MENTORING

Career Workshops
Discussion Forum

Scientific Activities

SCIENTIFIC ADVICE

Protocol-sharing
Ask the Experts
Technical Workshops

Networking Activities

JOURNAL CLUB

COMMUNICATIONS

Webpage and Portal
Social Media
Newsletter and blog
Media Collection

FUNDRAISING

ANNUAL SYMPOSIUM

Trainees Presentations
Poster Session
Keynoter Speakers

WIA Beth's Legacy Annual Symposium

